

PROJECT NUMBER: 1752
PROJECT TITLE: Optical Spectroscopy of Tobacco and Smoke
PROJECT LEADER: J. O. Lephardt
PERIOD COVERED: October, 1988

I. MASS SPECTRAL ANALYSIS OF WAXES

- A. Objective: To develop mass spectral methods utilizing soft ionization and MS-MS techniques for analysis of waxy materials and mixtures of waxes.
- B. Results: Sample preparation is in progress. In addition to obtaining samples of waxy material from tobacco, several model systems are being prepared. These model systems will be used as markers to identify the most expedient analytical approaches, to facilitate interpretation of data obtained from natural mixtures, and in some cases to provide analytical selectivity towards compounds of particular interest.
- C. Plans: Samples will be taken to a tandem mass spectrometry facility for analysis in mid November.

II. THERMAL ANALYSIS

- A. Objective: To establish capability in the Analytical Division for performing Thermal Gravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC) measurements.
- B. Results: A Perkin-Elmer TGA-7 and a Perkin-Elmer DSC-7 instruments have been installed in B-216 and Charles (Chuck) Chung has been hired to perform analyses with these instruments. Training by Perkin-Elmer of Chuck and Jim Lyons-Hart on the care and use of these instruments will occur during the first week of November.
- C. Plans: The initiation of sample analyses using these instruments is intended to occur during the second week of November.

III. MULTICOMPONENT SMOKE ANALYSIS (MSA) OF ART CIGARETTE MODEL

- A. Objective: To evaluate MSA data for differences between control and sample.
- B. Results: For both models, two sets of three cigarettes each were smoked on a standard five port cigarette machine. The Nicolet 160sx FT-IR was used as the detection instrument. The peak areas of 14 gas components were calculated. These data were sent to the VAX system and placed in a RS1 format. RS1 tables and graphs were created for data analysis. Both sets of control and sample data were averaged and compared by statistical programs in RS1.

- C. Conclusions: A review of the component areas reveals that no significant differences are apparent for any of the gases.
- D. Plans: A memo will be written to Betty Handy detailing the above work and results.